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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/748,618

12/30/2003

Karlton David Powell

BAYM 101

7495

7590

06/27/2006

Karlton Powell
3109 125th Avenue NE
Lake Stevens, WA 98258

EXAMINER

DUNWIDDIE, MEGHAN K

ART UNIT

PAPER NUMBER

2875

DATE MAILED: 06/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

31

Office Action Summary	Application No.		Applicant(s)	
	10/748,618		POWELL ET AL.	
	Examiner		Art Unit	
	Meghan K. Dunwiddie		2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-10, 12 and 20-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-28 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-10, 12, 20-23 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is a Final Rejection in response to the amendment received on February 7, 2006 by **Powell et al.**

Response to Arguments

1. Applicant's arguments with respect to claims 1-5, 7-10, and 12 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

2. The drawings were received on December 5, 2005. These drawings are acceptable.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 8-10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nemoto et al.** (US 6363603) in view of **Miyamae et al.** (US 2002/0093743).

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5. Regarding Claim 1, **Nemoto** et al. shows a light homogenizing optical sheet, comprising:

- A substantially constant thickness sheet [Figure 8A: (64)] made of transparent material with front and back surfaces [See Figure 8A],
- Each said front and back surface including a microlens array formed thereon [Figure 8A: (65)],
- Said microlens array each including a plurality of microlenses each aligned and registered with a microlens on an opposite said front and back surfaces [Figure 8A: (65)],
- Said optical sheet having a sufficient thickness so that said microlenses on opposite said front and back surfaces are separated by a distance substantially equal to the focal length of said microlenses [Figure 8A: (64 and 65)].

6. Regarding Claim 2, **Nemoto** et al. shows:

- Said optical sheet is planar [Figure 8A: (64)].

7. Regarding Claim 3, **Nemoto** et al. shows:

- The centers of said microlenses [Figure 8A: (65)] on said front surface and said back surface are transversely aligned along the sheet [See Figure 8A].

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8. Regarding Claim 4, **Nemoto** et al. shows:

- The pitch of the microlens array on said front and said back surfaces of the optical sheet are non-equal [See Figure 8B].

9. Regarding Claim 8, **Nemoto** et al. shows:

- Said optical sheet is non-planar such that each microlens is aligned and registered on the radius of curvature of said sheet [See Figures 9A and 9B].

10. Regarding Claim 9, **Nemoto** et al. shows a light homogenizing optical sheet comprising:

- A substantially constant thickness sheet made of transparent material with front and back surfaces [Figure 8A: (64)],
- Each said front and back surface including a microlens array formed thereon [Figure 8A: (65)],
- Said microlens array each including a plurality of microlenses each registered with a microlens on opposite said front and back surfaces such that exit cone chief ray angle is dependent on position across the sheet [Figure 8A: (65)],
- Said microlenses on opposite said front and back surfaces being separated by a distance of the sheet thickness substantially equal to the focal length of said microlens [See Figure 8A].

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11. Regarding Claim 10, **Nemoto** et al. shows:

- A second microlens array surface having non-equal pitch, as compared to the front microlens array surface pitch, such that the lenslet centers of both front and back surfaces are aligned with a specific transverse offset at a specific location within the plane of the sheet [Figure 8A: (68 and 66)].

12. Regarding Claim 12, **Nemoto** et al. shows:

- A second microlens array surface having substantially equal pitch, as compared to the front microlens array surface pitch, such that the lenslet centers of both front and back surfaces are aligned with an offset of up to one lenslet spacing across the sheet [See Figure 12A].

13. **Nemoto** et al. does not show:

- Said microlens array each including a plurality of non-hemispherical microlenses.

14. **Miyamae** et al. teaches:

- Said microlens array each including a plurality of non-hemispherical microlenses [See page 5 paragraph [0101]].

15. It would have been obvious for one of ordinary skill in the art, at the time of the invention to provide the light homogenizing optical sheet of **Nemoto** et al. with a microlens array including a plurality of non-hemispherical microlenses as taught by

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Miyamae et al. for the purpose and advantage of avoiding the creation of a hot spot intensities.

16. Claims 5, 7, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nemoto et al.** (US 6363603) and **Miyamae et al.** (US 2002/0093743) as applied to claim 1 above, and further in view of **Clarke et al.** (US 5956163).

17. Regarding Claim 5, **Nemoto et al.** and **Miyamae et al.** show the claimed invention as cited above, but do not show a reflective surface disposed at a distance of half the focal length of said microlenses from the front surface, such that said front surface acts as the said back surface upon reflection of light illuminating the front surface, enabling the light homogenizing optical sheet to be a reflective light homogenizing optical sheet.

18. Regarding Claim 29, **Miyamae et al.** shows:

- An array of one or more light-emitting sources located in a source plane [Figure 1: (2)], and an optical system, prior to the sheet, so as to form an illumination system of providing top-hat uniformity at an illumination plane [Figure 1: (48)].

19. **Clarke et al.** teaches:

- A reflective surface disposed at a distance of half the focal length of said microlenses from the front surface, such that said front surface acts as the said

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back surface upon reflection of light illuminating the front surface, enabling the light homogenizing optical sheet to be a reflective light homogenizing optical sheet [See column 5 lines 48-62 in reference to Figure 5].

20. It would have been obvious for one of ordinary skill in the art, at the time of the invention to create the light homogenizing optical sheet of **Nemoto et al.** and **Miyamae et al.** as a reflective optical sheet as taught by **Clarke et al.** for the purpose and advantage of increasing scattering of the illuminated light and producing uniform illumination.

21. Regarding Claim 7, **Nemoto et al.** and **Miyamae et al.** show the claimed invention as cited above, but do not specifically teach the optical sheet is made of a flexible material.

22. **Clarke et al.** teaches:

- Said optical sheet is made of flexible material [See column 3 lines 45-48].

23. It would have been obvious for one of ordinary skill in the art, at the time of the invention to provide the light homogenizing optical sheet of **Nemoto et al.** and **Miyamae et al.** with an optical sheet made of a flexible material as taught by **Clarke et al.** for the purpose and advantage of enabling less expensive fabrication techniques.

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24. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miyamae et al.** (US 2002/0093743) in view of **Nemoto et al.** (US 6363603).

25. Regarding Claim 20, **Miyamae et al.** shows an illumination system comprising:

- An array of one or more light-emitting sources located in a source plane [Figure 1: (2)];
- An optical sheet, separated from the source array by a first propagation distance [Figure 1: (3)];
- And an illumination plane separated from said optical sheet by a second propagation distance, so as to provide substantially uniform intensity output profile, within the illuminated area, versus position across said illumination plane [Figure 1: (1)].
- Said microlens array each including a plurality of non-hemispherical microlenses [See page 5 paragraph [0101]].

26. Regarding Claim 23, **Miyamae et al.** shows:

- An optical system disposed between said source plane and said optical sheet so as to collimate said sources of the source array [Figure 1: (48)];
- And an optical system disposed between said optical sheet and said illumination plane so as to condense a substantially top-hat intensity profile versus position across the plane of said illumination plane [Figure 1: (4)].

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27. **Miyamae et al.** does not show:

- Wherein said optical sheet is a light homogenizing optical sheet, comprising a substantially constant thickness sheet made of transparent material with front and back surfaces,
- Each said front and back surface including a microlens array formed thereon,
- Said microlens array each including a plurality of microlenses each registered with a microlens on opposite said front and back surfaces,
- Said optical sheet having sufficient thickness so that said microlenses on opposite said front and back surfaces are separated by a distance substantially equal to the focal length of said microlenses.

28. **Nemoto et al.** teaches:

- Wherein said optical sheet is a light homogenizing optical sheet, comprising a substantially constant thickness sheet made of transparent material with front and back surfaces [Figure 8A: (64)],
- Each said front and back surface including a microlens array formed thereon [Figure 8A: (65)],
- Said microlens array each including a plurality of microlenses each registered with a microlens on opposite said front and back surfaces [Figure 8A: (65)],
- Said optical sheet having sufficient thickness so that said microlenses on opposite said front and back surfaces are separated by a distance substantially equal to the focal length of said microlenses [See Figure 8A].

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29. It would have been obvious for one of ordinary skill in the art, at the time of the invention to provide the illumination system of **Miyamae et al.** with the optical sheet as taught by **Nemoto et al.** for the purpose and advantage of creating a uniform light to be emitted.

30. Regarding Claim 21, **Miyamae et al.** shows the claimed invention as cited above, but does not specifically teach the optical sheet is a tailored optical sheet, wherein the aligned and registered microlens arrays on said front and back surfaces have non-equal pitch, such that exit cones angles are dependent on position across the optical sheet and are allowed to overlap substantially at an illumination plane.

31. **Nemoto et al.** teaches:

- The optical sheet is a tailored optical sheet, wherein the aligned and registered microlens arrays on said front and back surfaces have non-equal pitch, such that exit cones angles are dependent on position across the optical sheet and are allowed to overlap substantially at an illumination plane [See Figure 8B].

32. It would have been obvious for one of ordinary skill in the art, at the time of the invention to provide the illumination system of **Miyamae et al.** with an optical sheet having a microlens array with a non-equal pitch as taught by **Nemoto et al.** for the purpose and advantage of creating a specific light emission pattern.

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33. Regarding Claim 22, **Miyamae** et al. shows the claimed invention as cited above, but does not specifically teach the optical sheet is a tailored optical sheet, wherein the registered microlens arrays on said front and back surfaces have equal pitch and are transversely aligned, such that exit cones angles exhibit a constant, yet non-normal, exiting angle versus position across the optical sheet.

34. **Nemoto** et al. teaches:

- The optical sheet is a tailored optical sheet, wherein the registered microlens arrays on said front and back surfaces have equal pitch and are transversely aligned, such that exit cones angles exhibit a constant, yet non-normal, exiting angle versus position across the optical sheet [See Figure 8A].

35. It would have been obvious for one of ordinary skill in the art, at the time of the invention to provide the illumination system of **Miyamae** et al. with an optical sheet having a microlens array with an equal pitch as taught by **Nemoto** et al. for the purpose and advantage of specific light emission pattern.

Allowable Subject Matter

36. Claims 24-28 are allowed.

Conclusion

37. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meghan K. Dunwiddie whose telephone number is (571)272-8543. The examiner can normally be reached on Monday through Friday 8 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571)272-2378. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MKD


Stephen Husar
Primary Examiner



Appl. No. 10/748,618
Amdt. dated Dec. 5, 2005
Reply to Office action of Sept. 7, 2005
Replacement Sheet

OK MKB 06/22/06

PRIOR ART

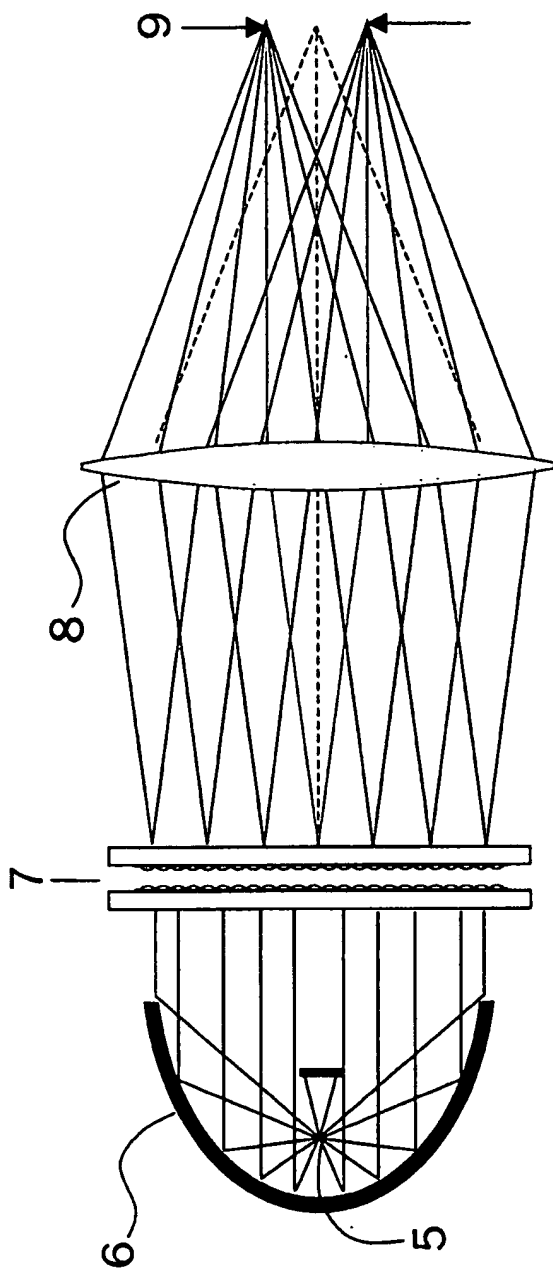


Fig. 1

OK MKB 06/22/06

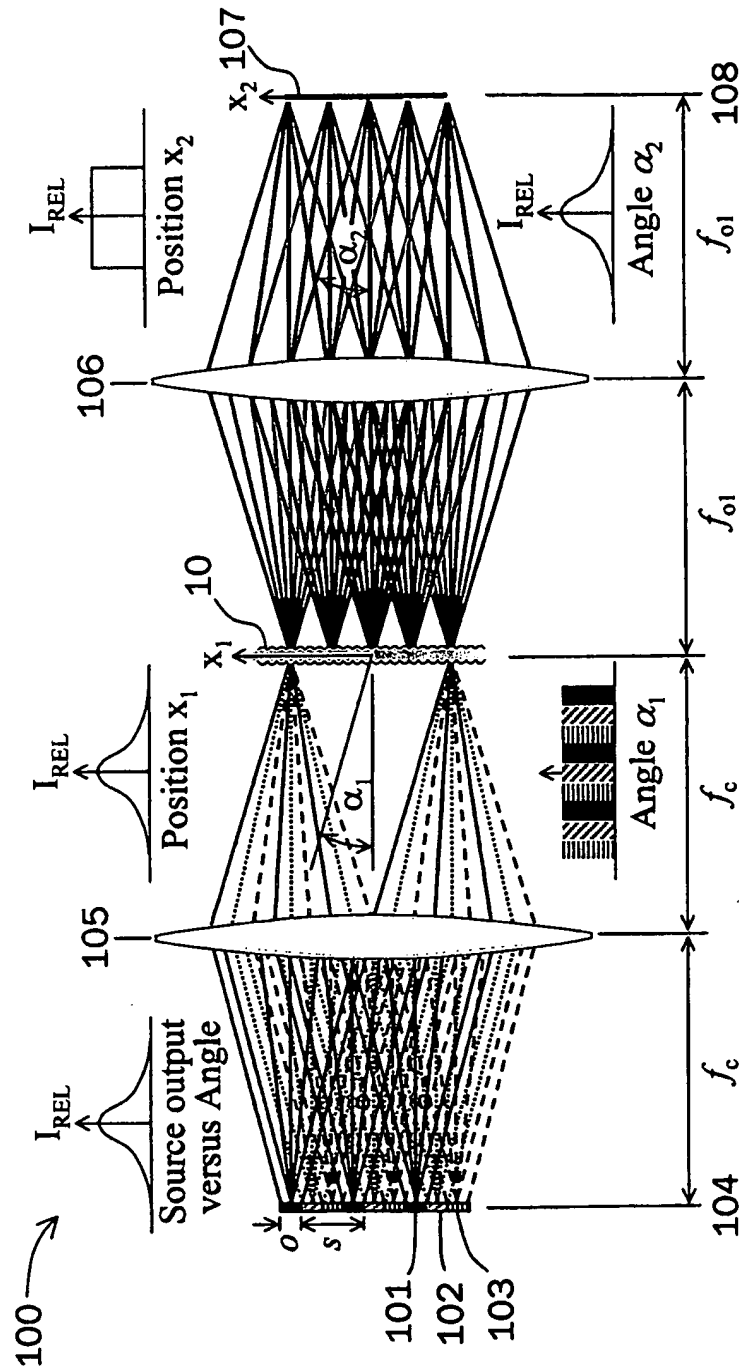


Fig. 2

OK MKb 06/22/06

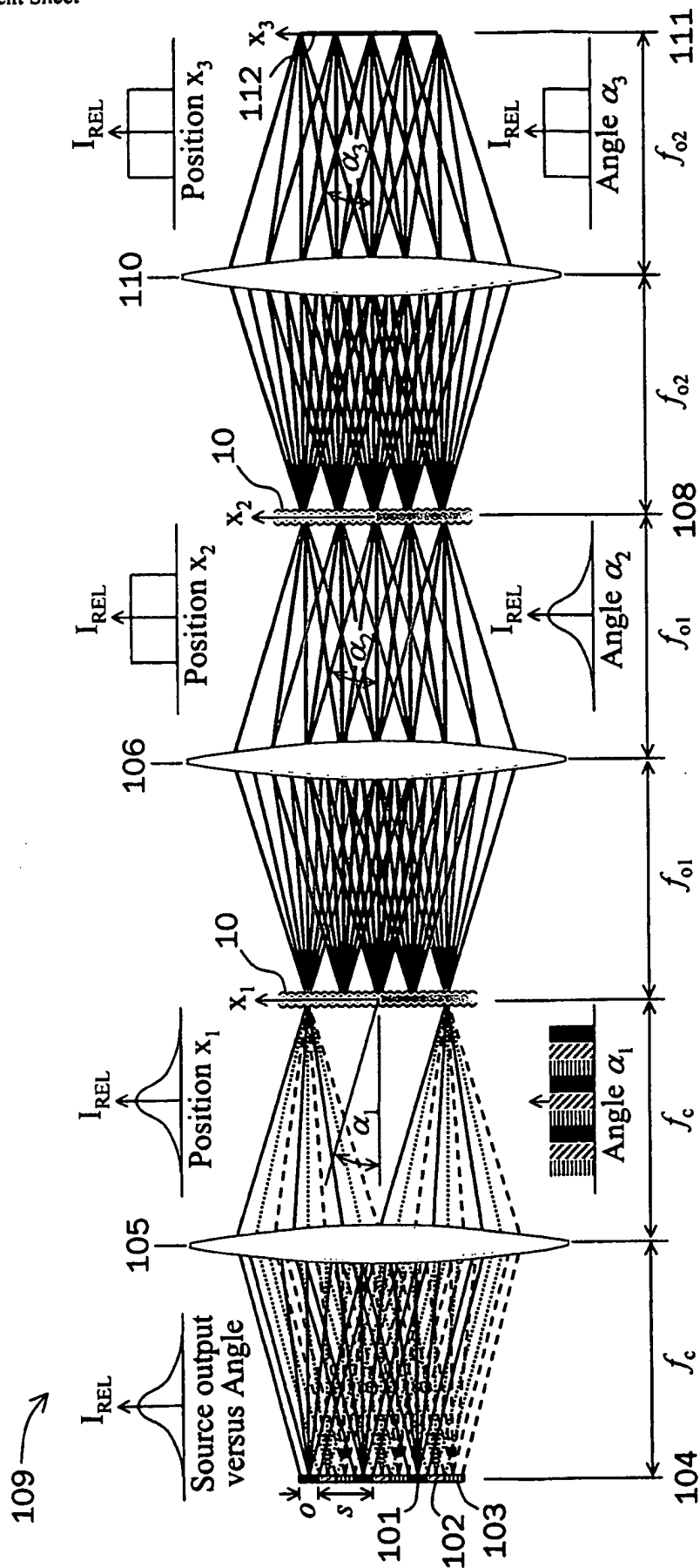


Fig. 3

OK MKD 06/22/06

Fig. 7A

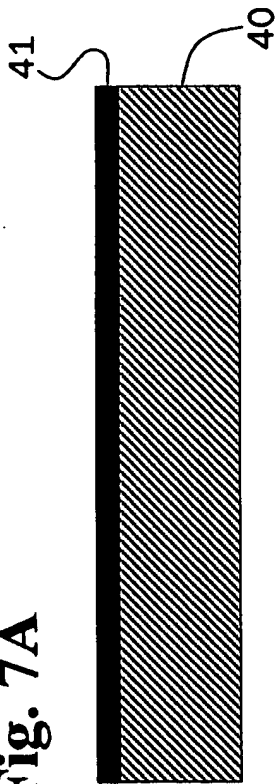


Fig. 7B

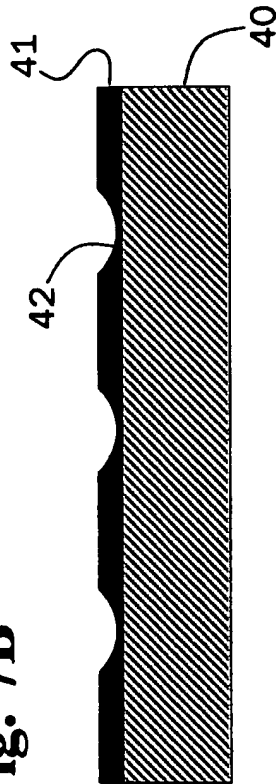


Fig. 7C



Fig. 7D

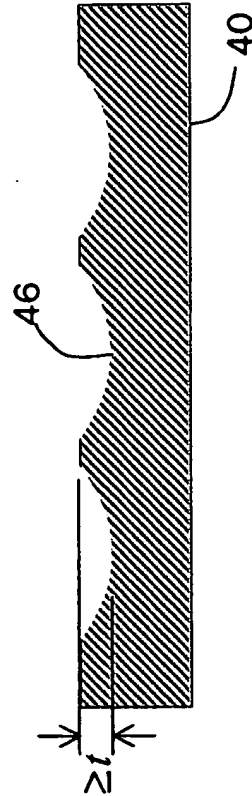


Fig. 7E

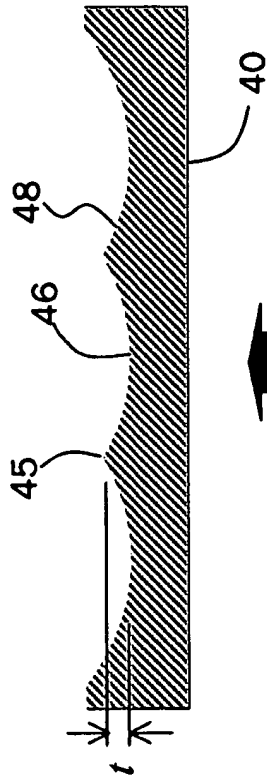


Fig. 7F

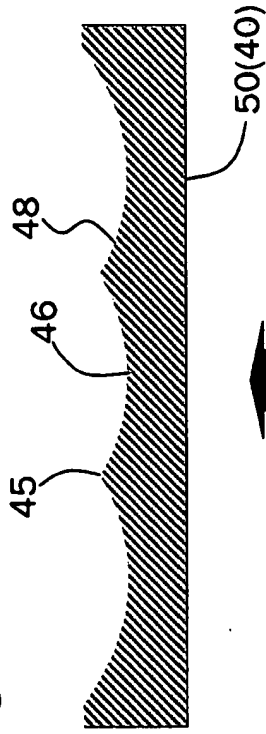


Fig. 9A



Fig. 9B



Fig. 9C

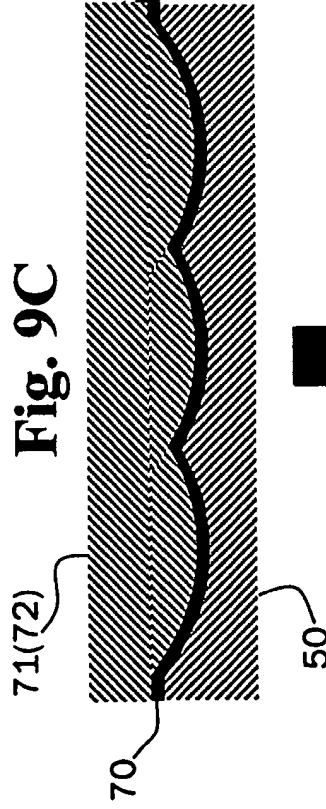


Fig. 9D



Fig. 9H

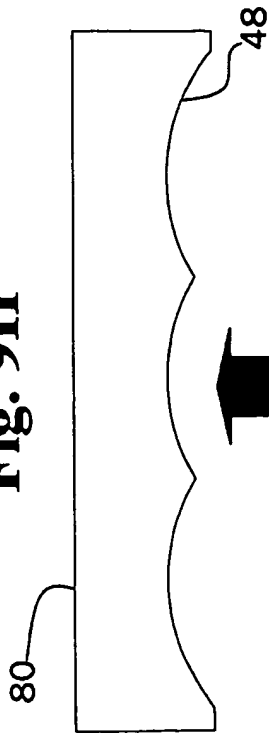


Fig. 9G

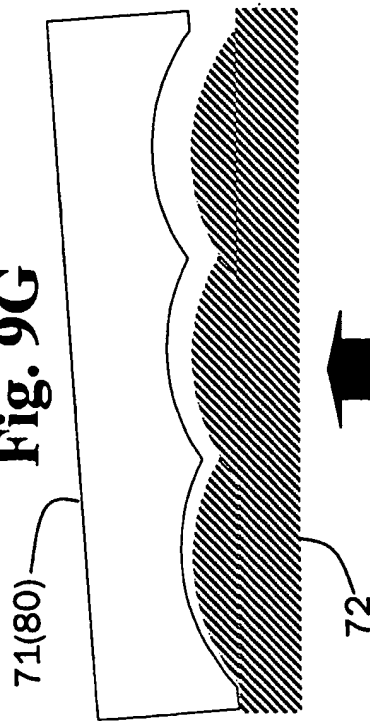


Fig. 9F

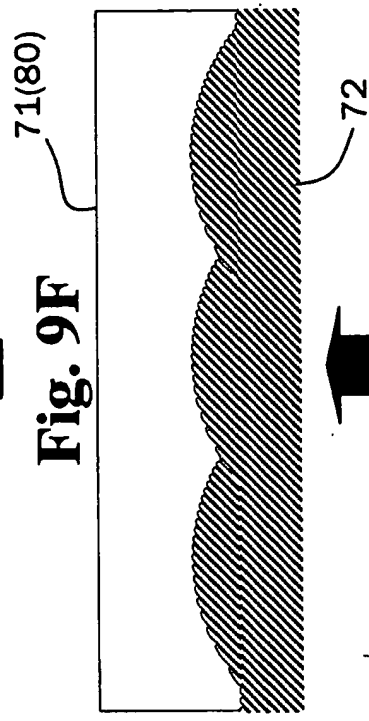


Fig. 9E



Fig. 10A

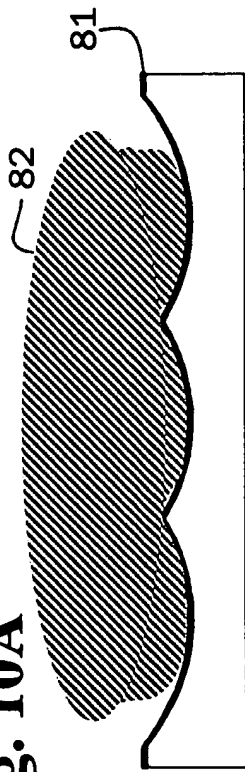


Fig. 10D

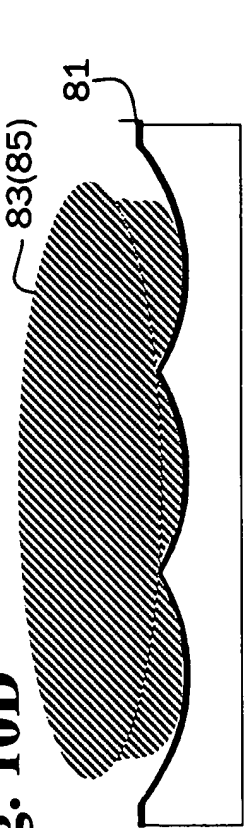


Fig. 10B

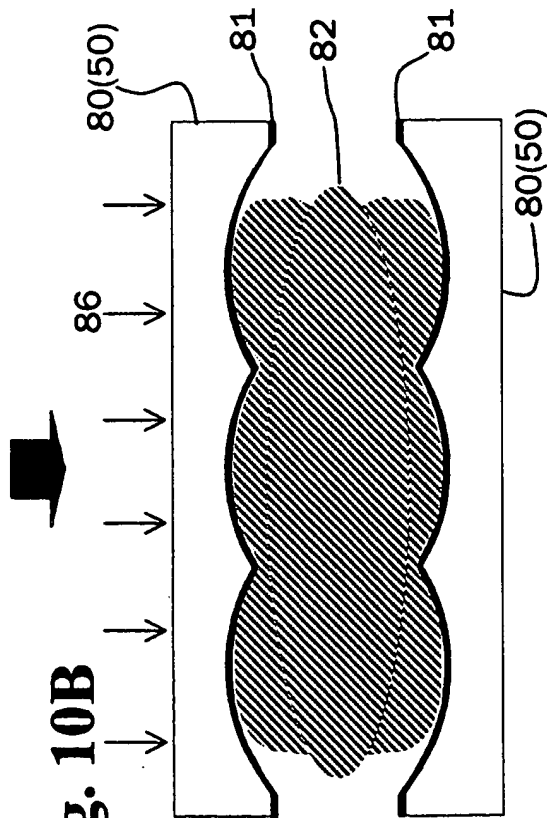


Fig. 10E

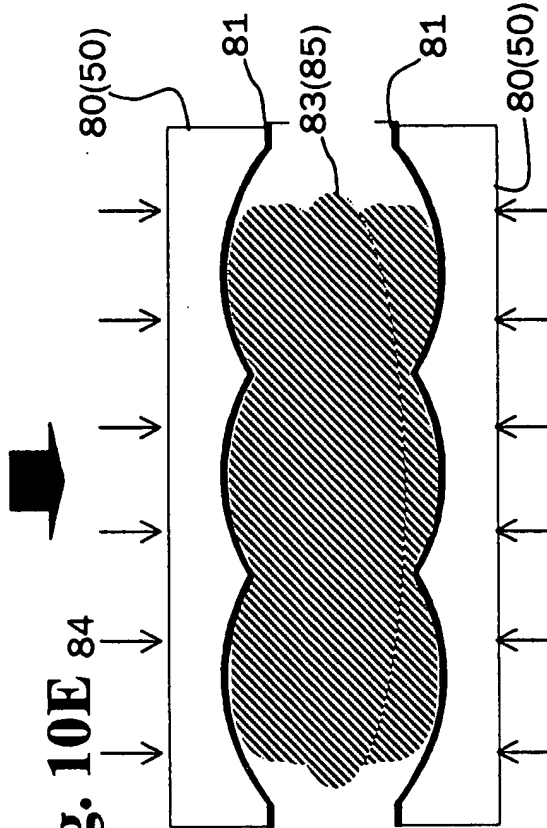


Fig. 10C

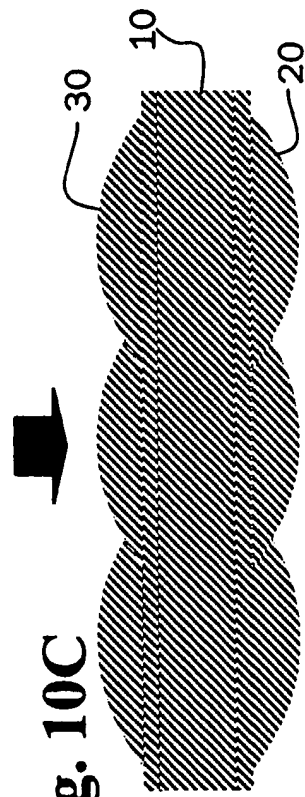


Fig. 10F



OK MKB 06/22/06

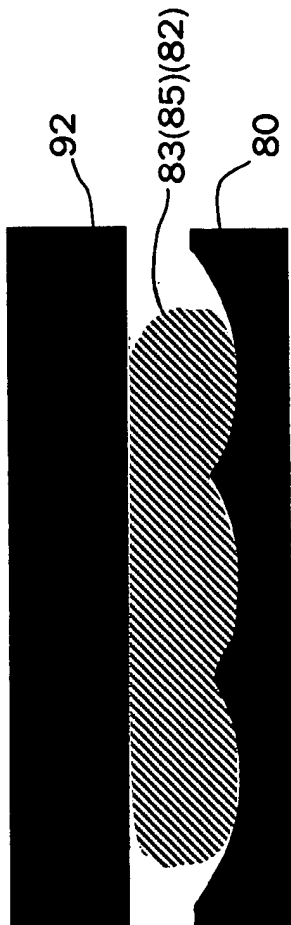


Fig. 11A



Fig. 11B



Fig. 11C



Fig. 11D

OK MKD
06/22/06

Fig. 12A

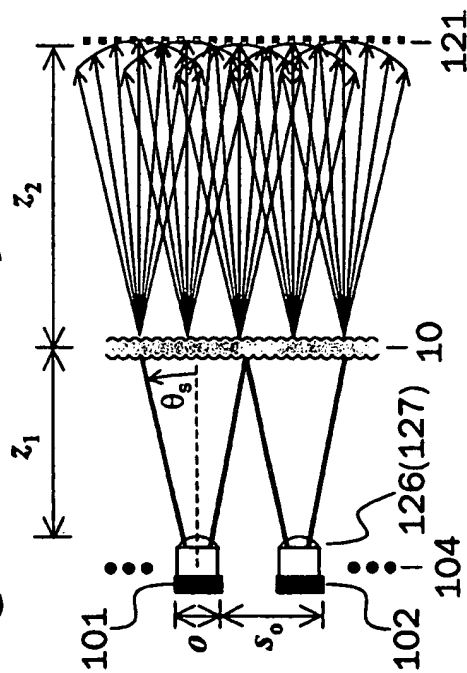


Fig. 12B

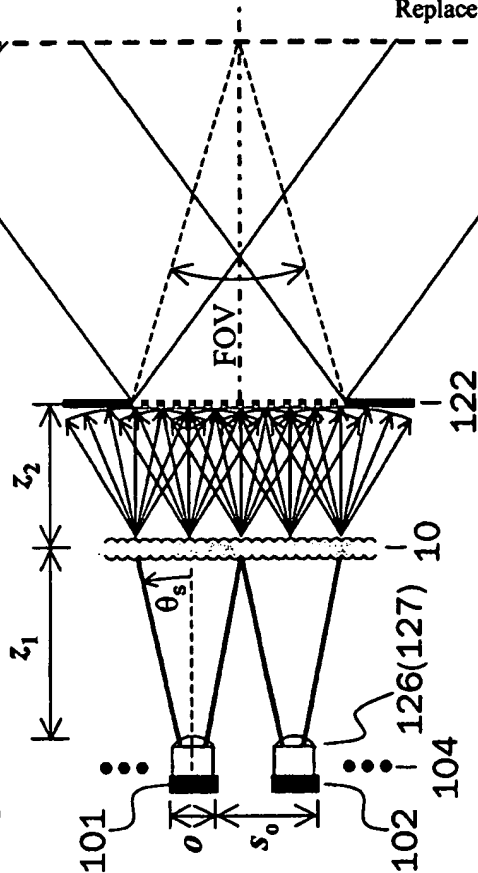


Fig. 12C

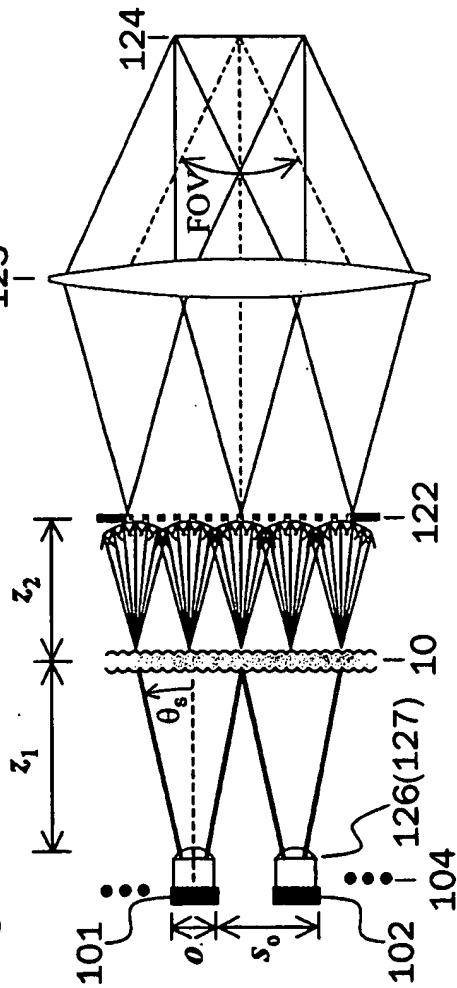
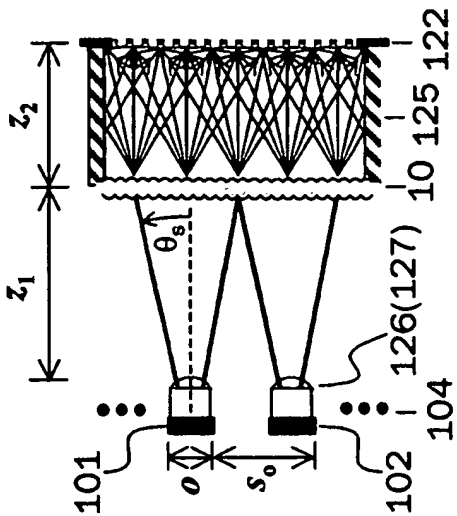


Fig. 12D



OK MKB 06/22/06

Fig. 14B

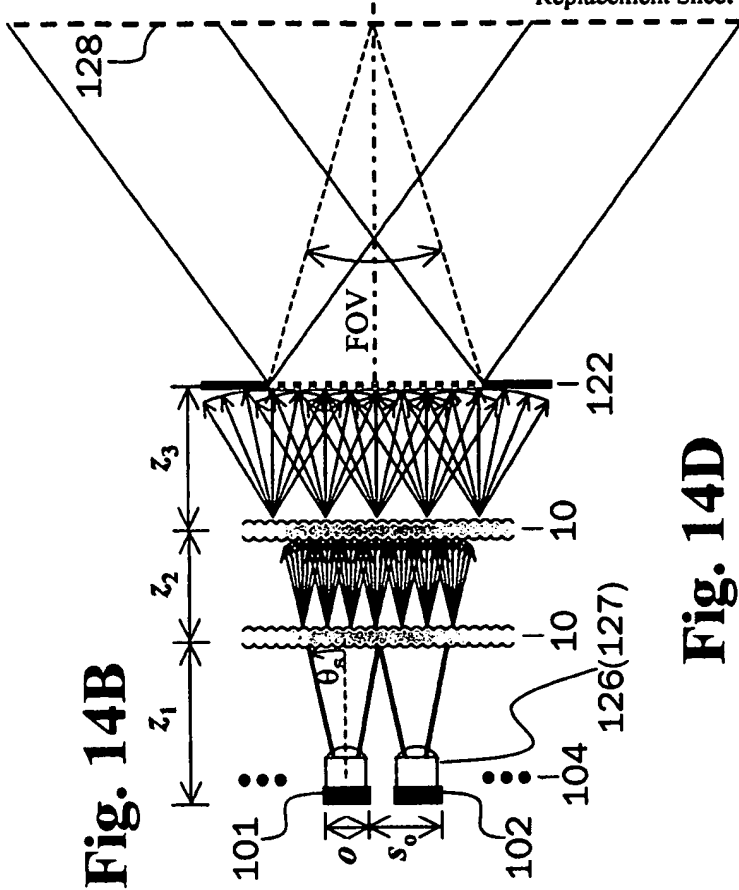


Fig. 14A

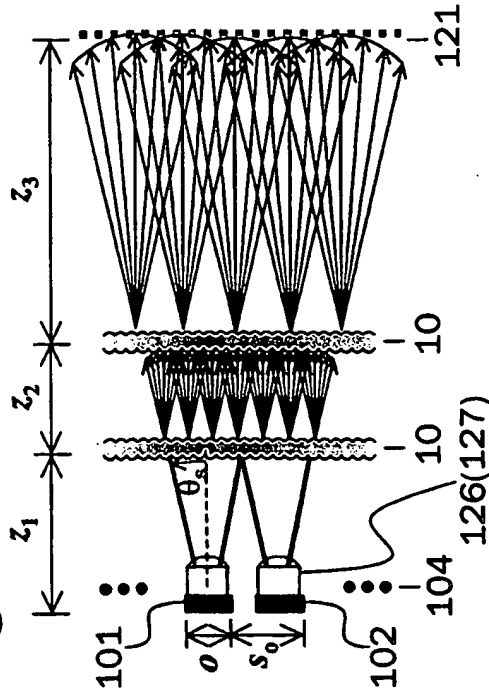


Fig. 14D

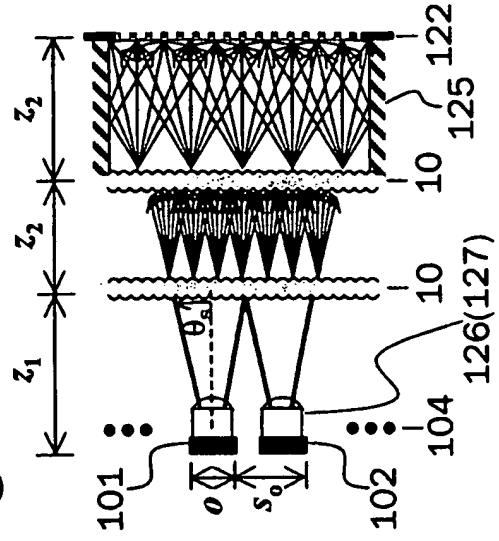
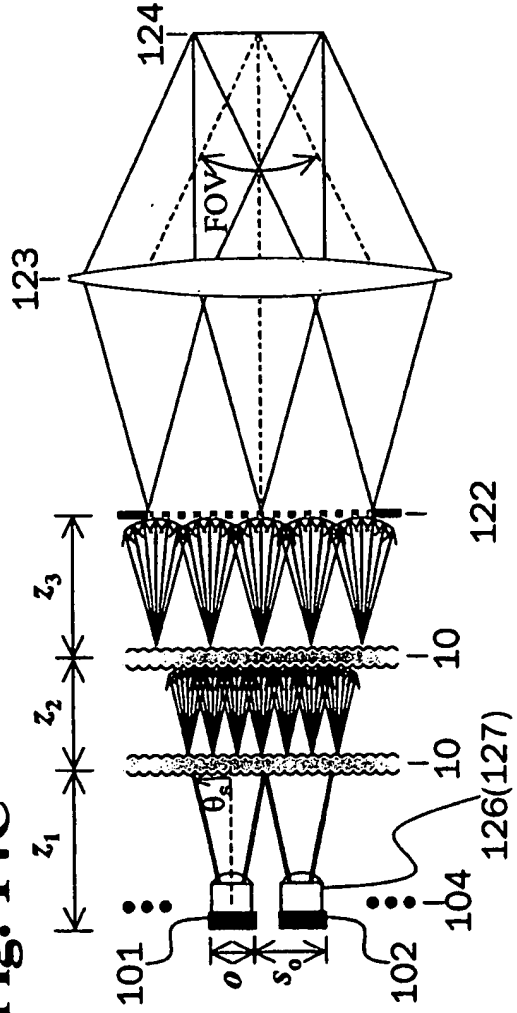


Fig. 14C



OK MKb 06/22/06

Fig. 16A

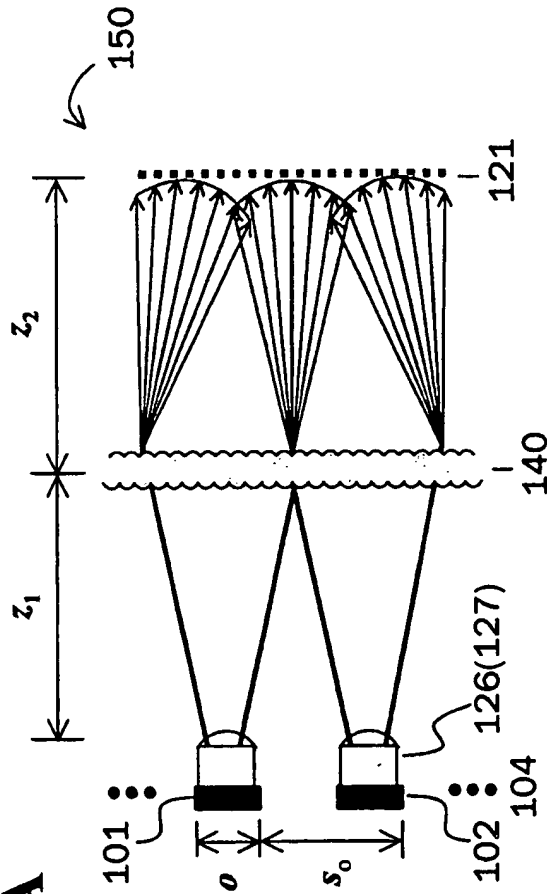
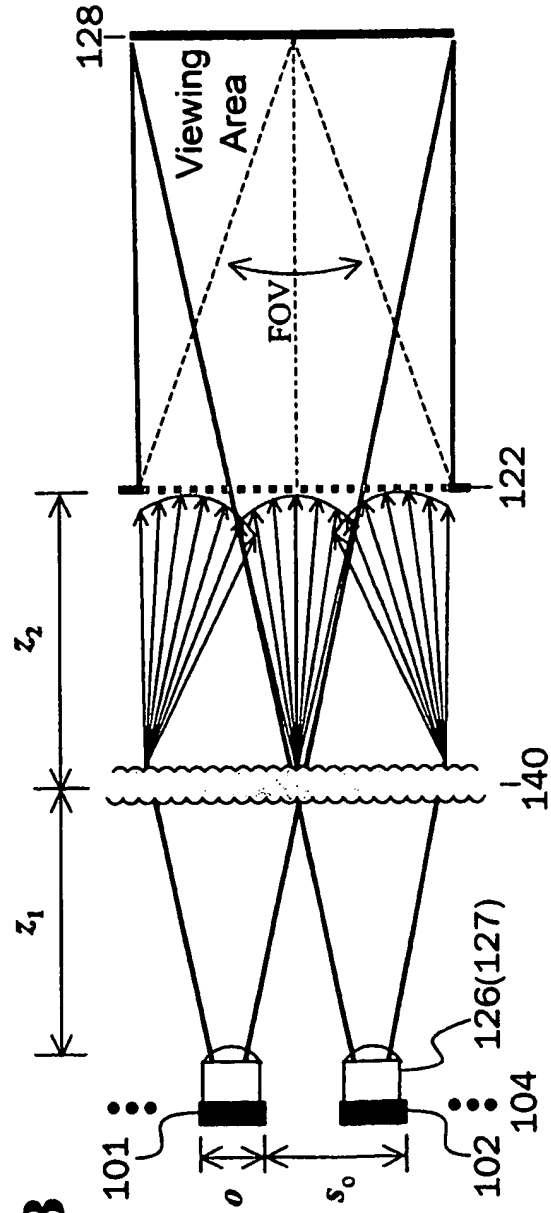


Fig. 16B



OK MKB 06/22/06

Fig. 16C

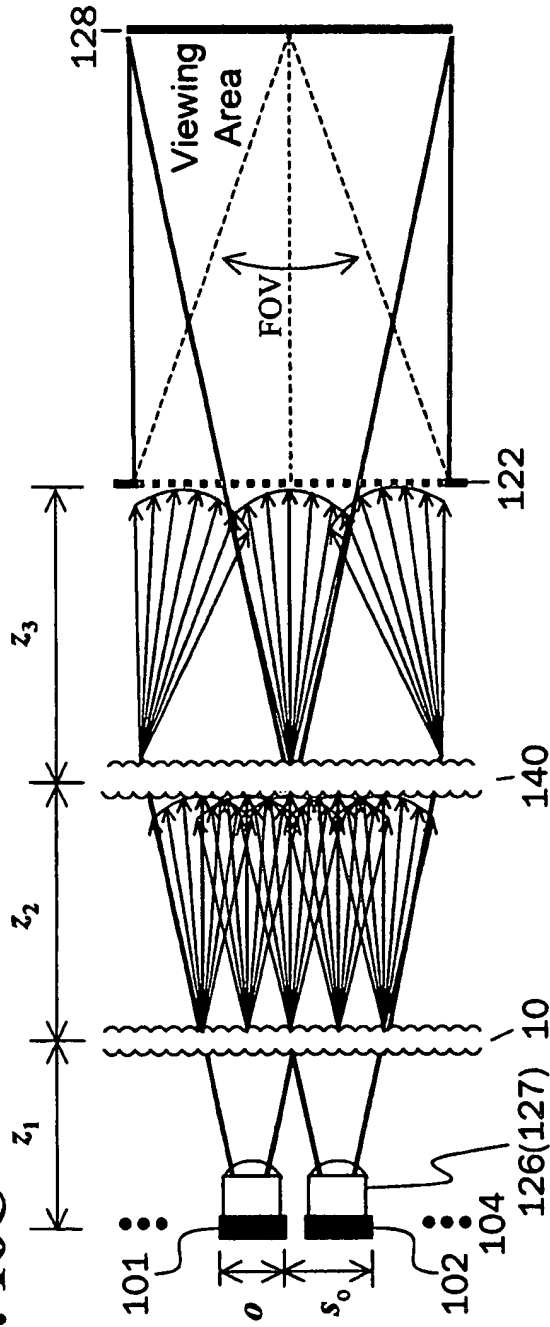
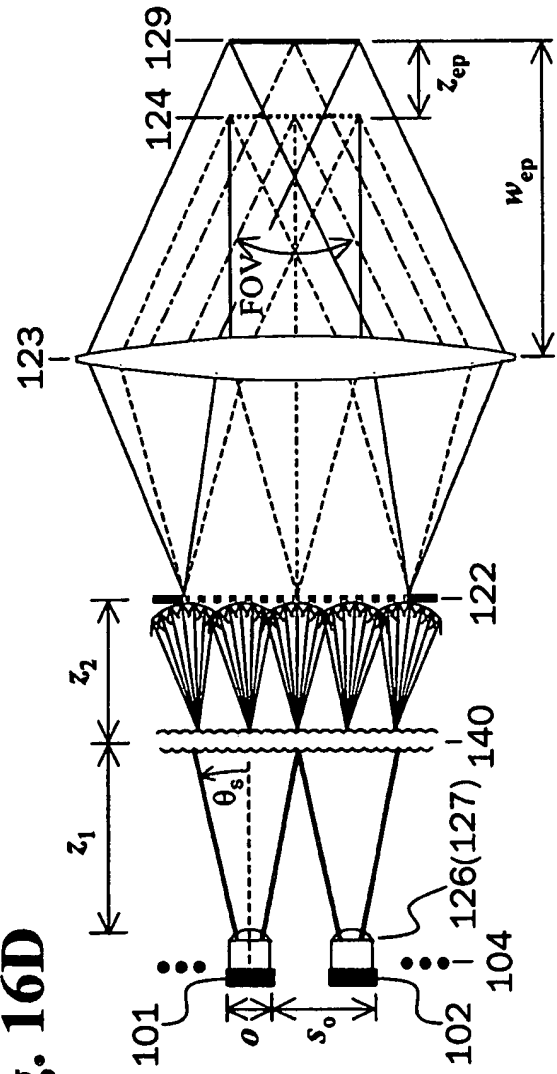


Fig. 16D



REFLECTIVE
LIGHT HOMOGENIZING
SHEET / FILM

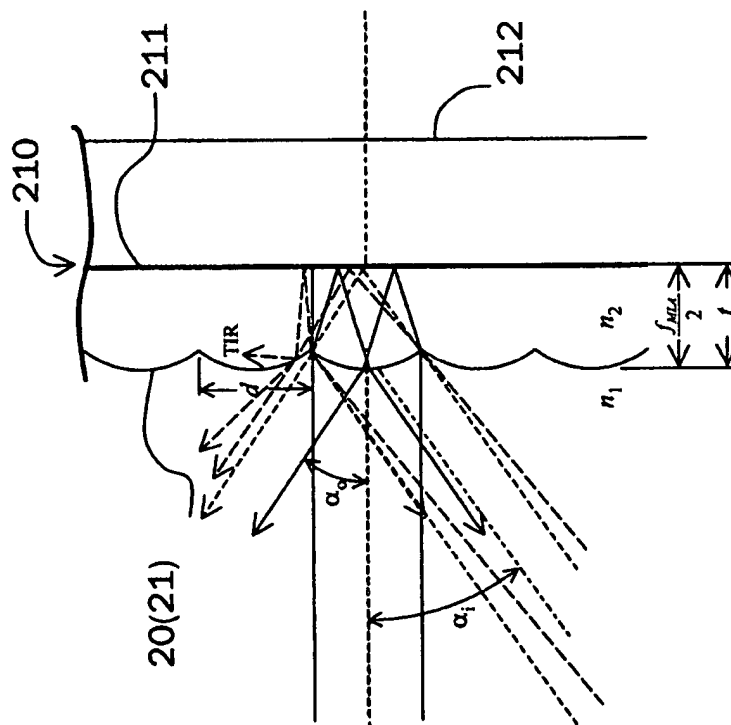


Fig. 17A

REFLECTIVE
LIGHT HOMOGENIZING
SHEET / FILM

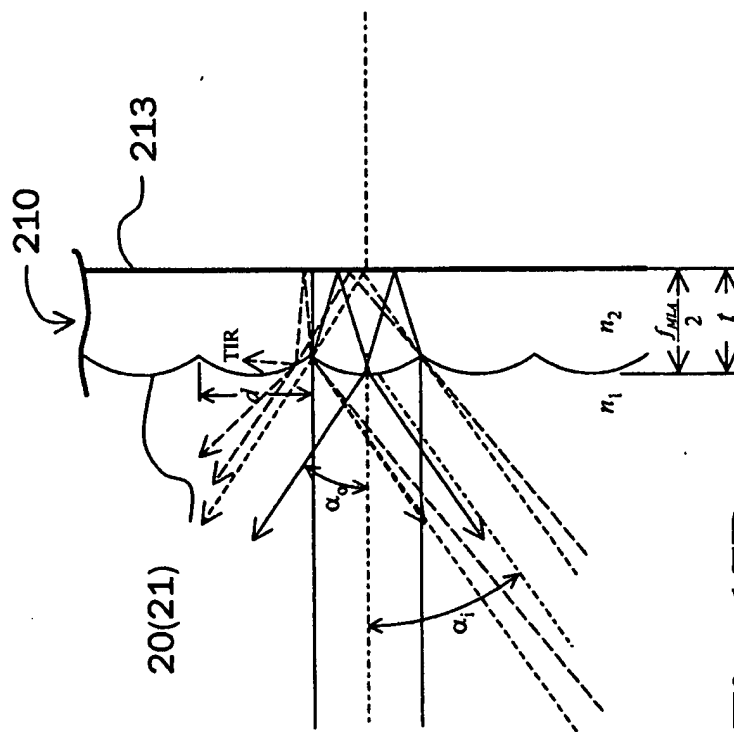


Fig. 17B

**REFLECTIVE
LIGHT HOMOGENIZING
SHEET / FILM
With Waveplate**

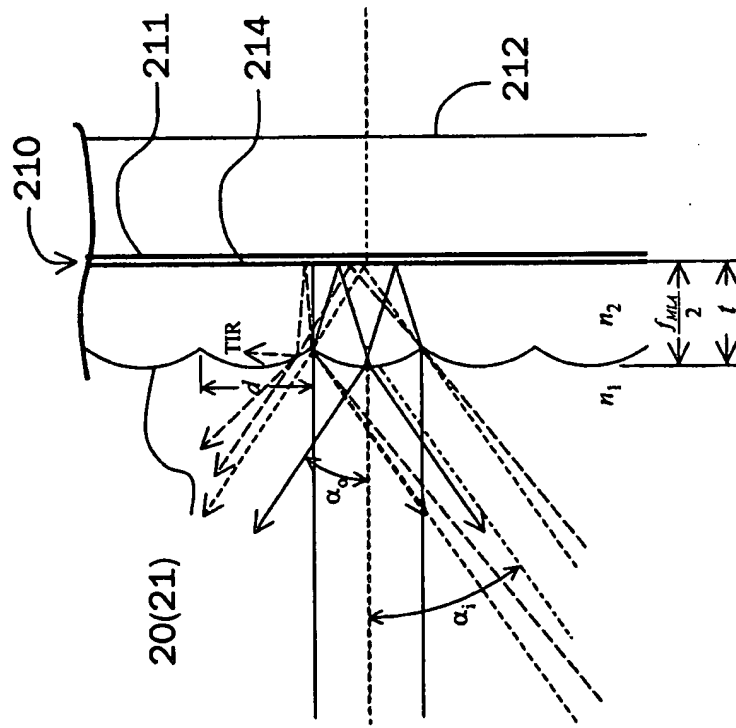


Fig. 18

**REFLECTIVE
LIGHT HOMOGENIZING
SHEET / FILM
Curved And/Or Flexible**

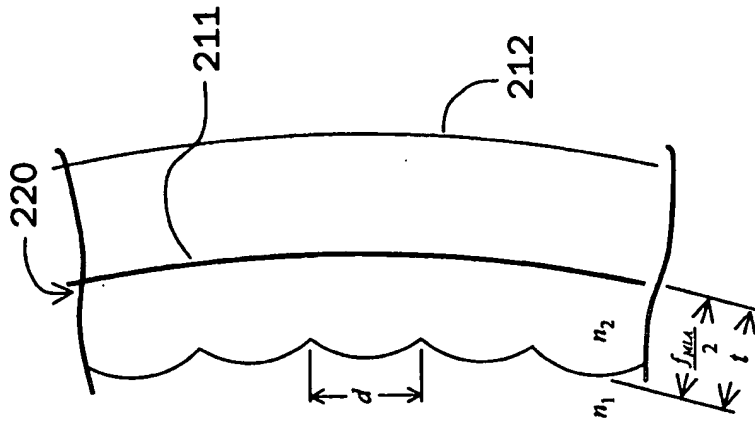


Fig. 19

OK MKP 06/22/02

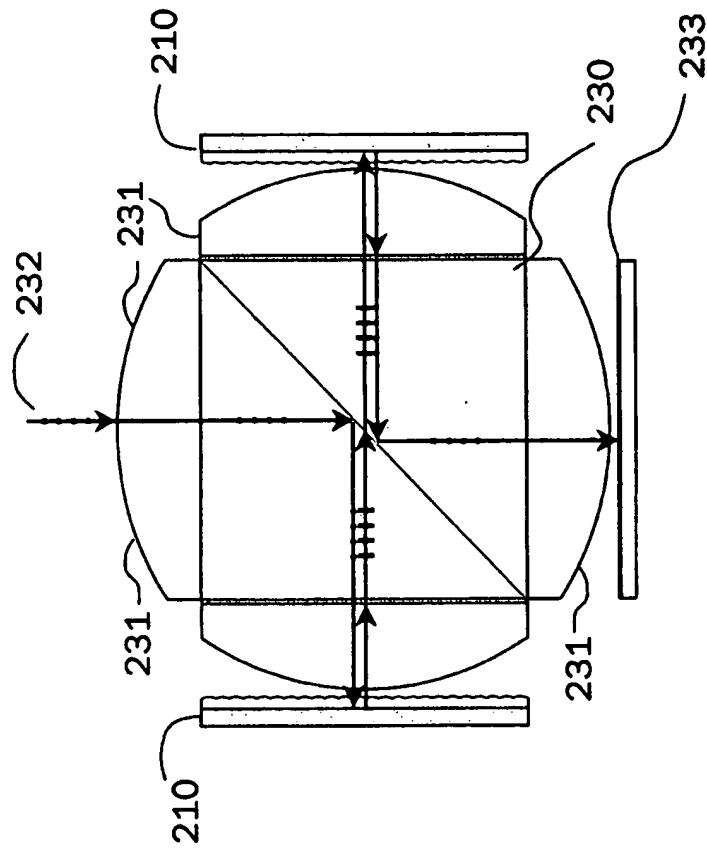


Fig. 20

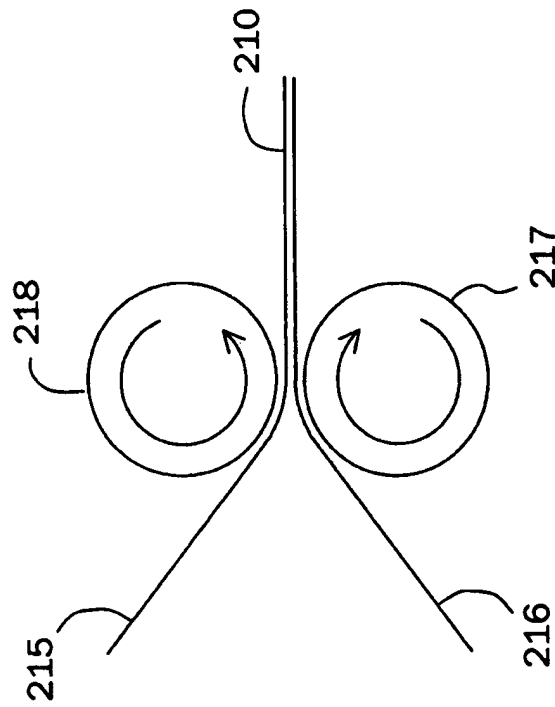


Fig. 21

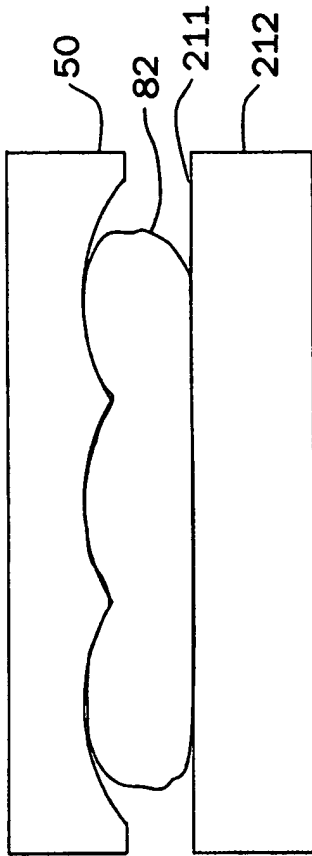


Fig. 22A

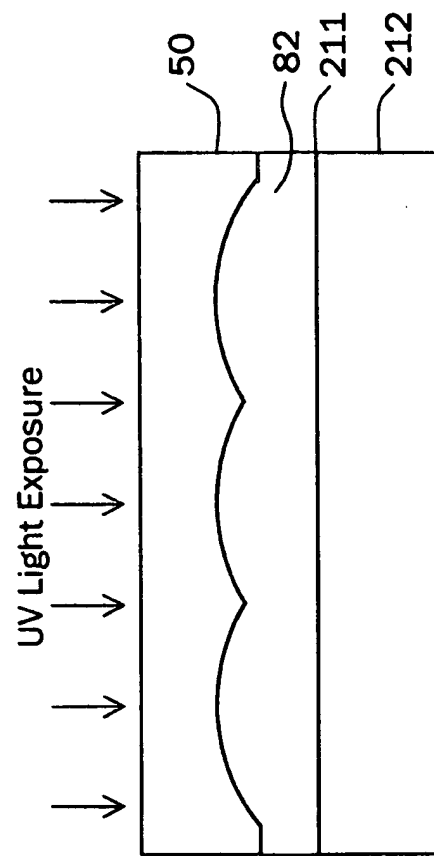


Fig. 22B

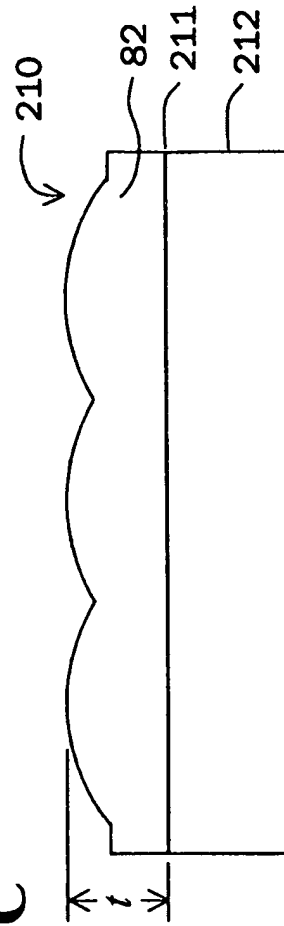


Fig. 22C

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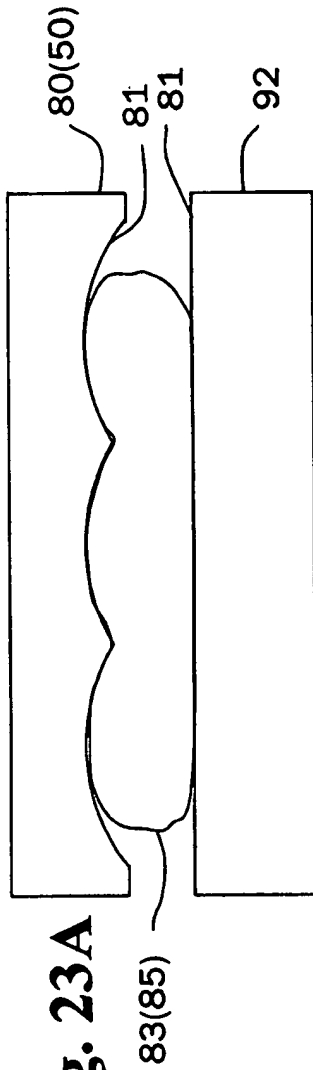


Fig. 23A

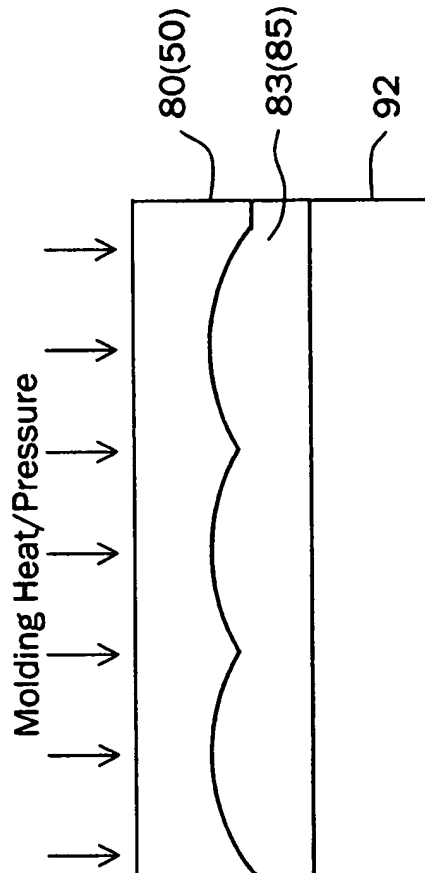


Fig. 23B

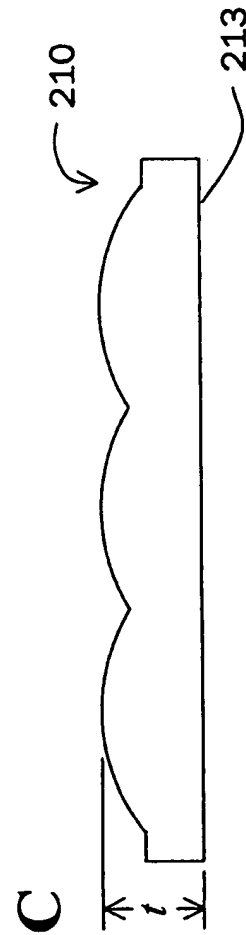


Fig. 23C